

**U.S. House of Representatives
Committee on Science, Space, and Technology
Subcommittee on Investigations & Oversight**

HEARING CHARTER

**“Federally Funded Research: Examining Public Access and Scholarly Publication
Interests”**

Thursday, March 29, 2012
9:30 a.m. – 11:30 a.m.
2318 Rayburn House Office Building

Purpose

On Thursday March 29, 2012, the Subcommittee on Investigations and Oversight will hold an oversight hearing to examine various models for disseminating federally funded research and their corresponding effects on the scientific process. Federally funded research is accessed through an increasing variety of methods beyond the traditional scholarly journal maintained by a scientific society that is made available only through a paid subscription. Some of the push towards greater public access stems from increasing complaints about the widely varying subscription costs of journals.¹

Advocates have urged Congress to require federally funded research to be made available online to the public with limited or no access restrictions. Some longstanding journals have switched to this model while other journals and their publishers prefer their existing business models. They fear that switching to a business model with greater public access will not generate enough income to replace existing subscription revenue and will threaten their viability. Some highly specialized journals have already switched to business models with greater public access utilizing long-term financial commitments by their institutional subscribers to replace subscription revenue. New journals based upon minimal or no access restrictions have grown in number during the past decade.

Background

The federal government funds 31% of all R&D conducted in the U.S., compared to 62% by business entities and the remaining 7% by universities, local and state governments, and other non-profit organizations.² This federally funded research is conducted by federal employees, private companies, and public institutions such as universities and research centers. With the exception of biomedical and defense research, most federally funded research is funded by federal agencies under the Committee’s primary jurisdiction.

¹ The upper range of journal pricing appears to be around \$30,000 per year as charged by Wiley & Sons for some versions of annual online access to The Journal of Comparative Neurology.

² "Science and Engineering Indicators 2012." *NSF.gov*. Web. 27 Mar. 2012.
<<http://www.nsf.gov/statistics/seind12/start.htm>>. See Appendices B and C.

One of the primary goals of federal research and development funding is the wide dissemination of robust research in a variety of fields.³ When made available to others through research articles and other means, this research can then be used as a building block for future research efforts or be commercialized in some way. Prior to the Internet, access to, and dissemination of, research papers was accomplished through publication in a research journal available to subscribers of that journal. With the advent of widespread Internet access, the traditional journal publishing model began to change to focus less on printed access and more on online access that still requires an access charge.

In recent years, a movement has developed to allow anyone to access federally funded research for no additional cost. The rationale being that free access should be permitted because federal taxpayers have already paid to fund the research. Others point out that any effort to force specific models of access, such as free or low cost access, will threaten important components of the existing publishing system, especially the financial health of smaller journals whose revenues fund the operation of affiliated scientific societies. The intellectual property rights of journals to control copying and distribution of their copyrighted works may also be harmed by federal open access mandates.

Parties interested in how federally funded research is accessed include:

- Researchers that use federal funds to conduct research and want their articles published, not only to add to the scientific body, but also to demonstrate their skills and knowledge in the topic area.
- Journals and their societies that are responsible for the publication and distribution of research papers that have been peer reviewed and edited by the journal.
- Policy advocates and commercial entities who want to understand the science used as a basis for proposed federal action.
- Taxpayers who want access to the research funded by their tax dollars for reasons that range from their own investigation into medical issues that impact them or their families to small businesses that do not have large research and development resources.

The Roles and Interests of the Federally Funded Researcher

Researchers interested in using federal funds to undertake research apply for research grants from federal agencies such as the National Science Foundation. According to the NSF, the agency receives 40,000 funding applications per year of which 11,000 are funded. Rules applicable to most research grant recipients require the creation of a research paper based upon the research.⁴

Researchers want to be published for several reasons beyond their desire to expand scientific knowledge. For example, university tenure often depends upon the volume of publishing. Publishing can attract additional grants based upon the initial research. There is also the prestige factor in publishing articles in highly regarded journals that are then cited by other researchers.

³ For example, Section 203(a)(3) of the Space Act of 1958, as amended, directs NASA to “provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof.”

⁴ Proposal and Award Policies and Procedures Guide, NSF 11-1, October 2010.

The Roles and Interests of a Journal and its Governing Society

Journals and their societies vary significantly in size and budget, generally driven by the number of researchers in that field. Societies are advocates for science in their field of study, hosting annual conferences and identifying grant and career opportunities for researchers in that field. Their journals are usually considered the most authoritative in that particular field of study.

Journals and their editors can serve as gatekeepers to particular areas of science through their own efforts and the decisions of peer review panels. This is viewed positively by traditional societies because poorly written or duplicative scientific papers can be weeded out prior to entering the peer review system that would waste the time of other researchers. In contrast, some advocates of greater public access argue that unconventional approaches to science may not be recognized by conservative journal editors so that the best option is simply to make all research available to let the reader decide what is important, accurate, and relevant.

Based upon a Carnegie Commission definition, OMB in 2004 defined peer review in its *Final Information Quality Bulletin for Peer Review* as “a form of deliberation involving an exchange of judgments about the appropriateness of methods and the strength of the author’s inferences.”⁵ In essence, the quality of the review process depends upon the skills and interest of these “peers.” The peer review process has been in existence since 1731 when the Royal Society of Edinburgh published *Medical Essays and Observations*.⁶ At the time, the reviewers of these articles were individuals considered by the editor to be the “most versed in these matters.”

The vast majority of journals still use the peer review process, but it is not a perfect system. The peer review process provides:

- An initial elimination by the journal editor of articles that do not meet commonly accepted scientific principles.
- An in-depth review of a journal topic conducted by those already knowledgeable about the topic.
- An ability to identify some research fraud, misconduct, and integrity issues.

Potential problems with the peer review process include:

- Choices of peer reviewers by the journal editor that are not sufficiently knowledgeable about the topic of that journal article.
- Any bias or lack of objectivity by one or more individuals on the peer review panel.
- No guarantees that all scientific fraud, misconduct, or integrity issues have been identified.
- Publication delays caused by the peer review process itself.⁷

Alternative peer review models have been tested by some journals, but it is unclear at this time whether these new models will replace or merely supplement the traditional peer review process.⁸

⁵ Carnegie Commission on Science, Technology, and Government, *Risk and the Environment: Improving Regulatory Decision Making*, Carnegie Commission, New York, 1993: 75.

⁶ *The Ups and Downs of Peer Review*, Benos et al. *Advances in Physiology Education*, 31: 145–152, 2007, p.145.

⁷ Sieber, Joan (2006). Quality and value: How can we research peer review?, *Nature*. doi:10.1038/nature05006

The Roles and Interests of Commercial Journal Publishers

Societies that do not have the resources or interest in maintaining in-house publishing staff for their journals that may only be published a few times per year can outsource the work to larger commercial publishers. Under this system, a percentage of revenues or a flat fee is paid to the society. This system effectively merges the interests of both parties.

Although many commercial publishers state that they are not opposed to greater public access, they are concerned about, and are often in opposition to, government mandates that would encourage or force a specific business model to be followed. They are also concerned with government efforts to force the publication of the version of the article that is edited and peer reviewed by the journal, the “version of record”, instead of the version initially submitted by the researcher, the “accepted manuscript.”⁹ Unlike a researcher who may have agreed to publish his work in a particular manner as a condition for receiving federal funds, journal publishers have not entered into any binding contracts or other agreements with federal agencies concerning their version of the article. Publishers believe that mandates requiring the version of record to be available for free either immediately or within a specific amount of time after initial publication in their journal is a violation of their intellectual property rights and threatens their basic business model.¹⁰

The Roles and Interests of Universities and Their Libraries

Although some universities and their libraries have taken the lead in supporting open access models as part of their mission to be a repository for knowledge, universities may have several interests related to access to federally funded research. Researchers want greater access to federal funding so that more research can be undertaken; university libraries want their users to have the widest possible access to research; and university based publishers want to ensure continued income from their publications to fund their operations. In response to overall budgetary concerns, libraries have looked to their journal subscription costs as one area to reduce spending. With the increasing growth of free online journals, this pressure to further reduce spending on paid journal subscriptions is likely to increase further.

Advocates for greater access point to the high subscription costs and profits of large commercial publishers as one reason to embrace open access models. For example, the largest for-profit journal publisher, Elsevier, publishes approximately 2,000 journals, some in partnership with scientific societies that outsource publication to Elsevier and share revenue. On annual revenue of 2.058 billion pounds (approximately \$3.3 billion) in 2011, Elsevier earned a profit of 768 million pounds (approximately \$1.2 billion) for a profit margin of 37%.¹¹ Commercial publishers see this profit as earned from work done by the publisher in marketing and creating tools for societies to use to publish their journals, rather than a profit off of the research itself.

⁸ Overview: Nature's peer review trial. *Nature* (2006) | doi:10.1038/nature05535

⁹ The definition of these terms is based upon the “Recommendations of the NISO/ALPSP Working Group on Versions of Journal Articles” available at http://www.niso.org/apps/group_public/download.php/48/Recommendations_TechnicalWG.pdf.

¹⁰ See testimony of Allan Adler, American Association of Publishers, before the House Oversight and Government Reform Committee, July 29, 2010. Available at <http://oversight.house.gov/wp-content/uploads/2012/01/20100729Adler.pdf>.

¹¹ Reed Elsevier 2011 Annual Report. Half of this revenue is from the North American market. During the past five years, Elsevier revenue has increased by 37% while profits have increased by 61%.

The Taxpayer Interests

With taxpayer funding responsible for approximately one third of all research and development in the nation, taxpayers have a vested interest in how their research dollars are used and how the results of research can be accessed.¹² Duplicative research wastes taxpayer resources that could be used for other purposes. Research that is duplicative or hard to locate is less beneficial than unique research that can be quickly used to accelerate scientific progress. Follow-on research continues expanding the scientific record and validates previous research in that area. This in turn bolsters confidence in the validity of the conclusions.

The Foundations of Open Access

In 1991, an online repository of physics articles was created in a service called “ArXiv”, a database that has now grown to over 700,000 articles.¹³ Noting the success of ArXiv and similar databases, a group of interested researchers came together in Budapest, Hungary in February 2002 under the auspices of the Soros Foundation and released the Budapest Open Access Initiative defining open access as:

“... we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.”¹⁴

The European Union released a report on scientific publishing in 2005 that highlighted the societal and scientific benefits of open access models.¹⁵ Today, there are over 7,500 open access journals accessible online.¹⁶

Gold Open Access (Journals)

Gold open access is the term given to the publishing model by which the costs to publish an article are recouped by means other than subscription or access charges imposed upon the reader.¹⁷ Although revenue from advertisements in the journal may be used to offset costs, the most common source of funding for this publishing model are fees collected in advance from the author or his sponsoring institution. These fees, sometimes called “page charges,” “printing charges,” or “publication charges,” are used by the publishing journal to pay for arranging the peer review, final editing, and publication. Under this model, the researcher knows the

¹² National Science Foundation, *Science and Engineering Indicators 2012* (NSB 12-01), supra.

¹³ “The First Free Research-Sharing Site, ArXiv, Turns 20 With an Uncertain Future.” - *Wired Campus*. Web. 27 Mar. 2012. <<http://chronicle.com/blogs/wiredcampus/the-first-free-research-sharing-site-arxiv-turns-20/32778?sid=wc>>.

¹⁴ “Budapest Open Access Initiative.” *Budapest Open Access Initiative*. Web. 27 Mar. 2012. <<http://www.soros.org/openaccess/read>>.

¹⁵ “Digital Broadband Content: Scientific Publishing” OECD. DSTI/ICCP/IE(2004)11/FINAL. 02 Sep. 2005.

¹⁶ “Directory of Open Access Journals.” *Directory of Open Access Journals*. Web. 27 Mar. 2012. <<http://www.doaj.org/>>.

¹⁷ “Peter Suber, Open Access Overview.” *Open Access Overview*. Web. 27 Mar. 2012. <<http://www.earlham.edu/~peters/fos/overview.htm>>.

applicable fees for gold open access journals before submitting a paper for possible publication. A review of current charges for gold open access journal finds a typical cost of several thousand dollars in charges to the author of the article. Charges in excess of five thousand dollars per paper appear to be rare.¹⁸

Federal guidelines permit the payment of such charges. Revised in May 2004, paragraph 34 of attachment B to OMB Circular A-87 states that: "Page charges for professional journal publications are allowable as a necessary part of research costs where: (1) The research papers report work supported by the Federal Government; and (2) The charges are levied impartially on all research papers published by the journal, whether or not by federally sponsored authors."

OMB and individual federal agencies do not currently require publication in an open access journal although there is anecdotal evidence that there is pressure from funding agencies for authors to seek out journals with the lowest page charges, rather than journals of the author's choosing. For example, the library of CERN, Europe's Organization for Nuclear Research, that receives federal funds to support operations of the Large Hadron Collider states that it "... encourages authors to publish in Open Access journals."¹⁹

Green Open Access (repositories)

Green open access is the term given to publicly accessible self-archiving efforts by article authors or various host institutions. Under the green open access model, once an article is considered ready for public release, the author or his host institution deposits a copy of the article in a publicly accessible online database. The author may not have asked others to review the article prior to publication and the article may have already been published elsewhere. If peer review has not occurred, the "strength" of the article as viewed by others may not be as high as that of peer reviewed articles. The Digital Access to Scholarship at Harvard (DASH) is one example of such a repository.²⁰

Current Federal Agency Efforts Concerning Public Access of Federally Funded Research

The most significant role undertaken by the federal government relating to public access has been at the National Institutes of Health (NIH). NIH operates PUBMED Central, a centralized, publicly accessible database containing 2.4 million journal articles that have been submitted by 3,000 journals who deposit some or all of the articles in their journals to the database.²¹

Another effort by federal agencies to enable greater public access to research funded in part by federal agencies, albeit much smaller in scale than PUBMED Central, has been a series of affirmative steps by the libraries of federal energy labs to participate in international collectives to support the move of a small group of selected physics journals to an open access model. The

¹⁸ A comparison of charges from several publications can be found at <http://www.biomedcentral.com/about/apccomparison>.

¹⁹ "OA and low cost journals: where to publish?" *OA and low cost journals: where to publish?* Web. 27 Mar. 2012. <<http://library.web.cern.ch/library/OpenAccess/Journals.html/>>

²⁰ "Digital Access to Scholarship at Harvard: Opening Harvard Research." *Digital Access to Scholarship at Harvard: Opening Harvard Research*. Web. 27 Mar. 2012. <<http://dash.harvard.edu/>>.

²¹ "PUBMED Central." *National Center for Biotechnology Information*. U.S. National Library of Medicine. Web. 27 Mar. 2012. <<http://www.ncbi.nlm.nih.gov/pmc/>>.

Sponsoring Consortium for Open Access Publishing in Particle Physics (SCOAP³) is a worldwide consortium of:

- High-energy physics funding agencies
- High-energy physics laboratories
- Leading national and international libraries and library consortia.²²

SCOAP³ began with a 2007 proposal of interested groups including physics scientists to move a small group of journals focusing on high-energy physics and related fields to an open access model. The goal was to replace each journal's income from publications and access charges with guaranteed sources of annual dues from the coalition members in return for the chosen journals to move to an open access model. In the U.S., SCOAP³ partners are primarily universities, but the following Department of Energy labs are also members through their respective libraries:

- Argonne National Laboratory
- Fermilab
- Los Alamos National Laboratory
- Lawrence Berkeley Laboratory - University of California, Berkeley
- Lawrence Livermore National Laboratory
- Pacific Northwest National Laboratory
- Savannah River National Laboratory
- Stanford Linear Accelerator Center
- Thomas Jefferson Laboratory²³

Efforts to convert several physics journals to an open access model are now underway. Dues from SCOAP³ partners will be calculated based upon the nationality of the articles published in the covered journals during the year 2005. For U.S. libraries and national labs, the U.S. share of the overall cost would be 24% although the financial contribution of DOE labs is far less than 1% of the overall cost.²⁴

Previous Committee Activity

In June 2009, then Science, Space, and Technology Committee Chairman Bart Gordon asked interested parties to meet under the auspices of the Committee to discuss scholarly publishing issues and develop, to the greatest extent possible, recommendations for how public access to journals with content derived from federally funded research could be increased.²⁵ An ad-hoc group called the Scholarly Publishing Roundtable was formed. The participants included representatives from academia, research librarians, journal publishers, and researchers in the area of library and information science. Committee and OSTP staff also joined the participants.

In January 2010, the Scholarly Publishing Roundtable released a 25-page report containing eight recommendations as follows:

1. Agencies should work in full and open consultation with all stakeholders, and with OSTP, to develop their public access policies

²² "SCOAP³." *SCOAP³*. Web. 27 Mar. 2012. <<http://scoap3.org>>

²³ "SCOAP³ US." *SCOAP³*. Web. 27 Mar. 2012. <http://scoap3.org/scoap3us_alpha.html>

²⁴ *Ibid.*

²⁵ The charge to the group can be found at <http://www.aau.edu/WorkArea/DownloadAsset.aspx?id=9666>.

2. Agencies should establish specific embargo periods between publication and public access
3. Policies should be guided by the need to foster interoperability
4. Every effort should be made to have the version of record as the version to which free access is provided
5. Government agencies should extend the reach of their access policies through voluntary collaborations with nongovernmental stakeholders
6. Policies should foster innovation in the research and educational use of scholarly publications
7. Government public access policies should address the need to resolve the challenges of long-term digital preservation
8. OSTP should establish a public access advisory committee

These recommendations were supported by 13 of the 15 roundtable participants. The two dissenters from the roundtable recommendations were the representatives from Elsevier and PLoS, the Public Library of Science, an open access publisher.

Following the release of these recommendations, the America Competes Reauthorization Act of 2010 tasked the Office of Science and Technology Policy (OSTP) to “establish a working group under the National Science and Technology Council with the responsibility to coordinate Federal science agency research and policies related to the dissemination and long-term stewardship of the results of unclassified research, including digital data and peer-reviewed scholarly publications, supported wholly, or in part, by funding from the Federal science agencies.”²⁶ The working group was required to submit a report to Congress within one year after enactment. OSTP collected 378 public comments for this report that is expected to be submitted to Congress within the next few weeks.²⁷

Related Legislation

Three pieces of legislation that focus on this issue have been introduced in the 112th Congress. On December 16, 2011, H.R. 3699, the Research Works Act of 2011 was introduced and referred to the House Oversight and Government Reform Committee.²⁸ On February 12th, 2012, the Federal Research Public Access Act of 2012 was introduced in the House and Senate as H.R. 4004 and S. 2096.²⁹ H.R. 4004 was referred to the House Oversight and Government Reform Committee and S. 2096 was referred to the Senate Homeland Security and Government Affairs Committee. No hearings or other legislative action have occurred on any of the legislation.

H.R. 3699 and H.R. 4004 / S. 2096 take opposite approaches to public access of federally funded research. H.R. 3699 effectively prohibits federal agencies from adopting open access mandates. In contrast, H.R. 4004 / S. 2096 requires federal agencies with extramural research expenditures of over \$100 million to adopt specific policies that result in free public online access to peer-

²⁶ Section 103 of P.L. 111-358.

²⁷ “Request for Information: Public Access to Digital Data Resulting From Federally Funded Scientific Research,” 76 FR 68517, November 4, 2011. Submitted comments can be found at <http://www.whitehouse.gov/administration/eop/ostp/library/publicaccess>.

²⁸ The sponsor of H.R. 3699 is Mr. Issa of California.

²⁹ The sponsor of H.R. 4004 is Mr. Doyle of Pennsylvania. The sponsor of the Senate companion bill is Senator Cornyn of Texas.

reviewed articles not later than six months after publication in peer-reviewed journals, shortening the current NIH requirement.

Issues

Intellectual Property

Article I, Section 8 of the U.S. Constitution gives Congress the power “To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” All publishers, journal or otherwise, rely upon U.S. copyright law, codified at Title 17 of the U.S. Code, as the basis for an ownership right that can be enforced in federal court. Although U.S. copyright law is detailed, for the purposes of this issue, the most relevant provisions of copyright law are the statutory rights to control uses of copyrighted works and defenses to infringement of those rights.³⁰

All versions of a research paper and various versions of the related journal article are protected by U.S. copyright law. Under the traditional journal system, authors typically continue to own the copyright to their original version, but assign a non-exclusive right to the journal to reproduce the article, either in its initial form or, most commonly, after changes made due to peer review and journal editing and formatting. The journal then typically owns the copyright in the peer-reviewed, journal-edited version. Determining which version should be made available to the public for free is a major issue of concern for all parties since the version of record is considered the most authoritative.

Commercial publishers depend upon strong intellectual property protections to protect their publications.³¹ Efforts by the government to force journals to retroactively make available their copyrighted articles on the Internet for public access could potentially run afoul of the takings clause of the U.S. Constitution. However, should a federal agency prospectively require recipients of federal funds to ensure that the publication of their work was made in an open access manner as a condition for receipt of federal funding for the research, a takings complaint would likely not be successful. The latter approach is the one taken so far by NIH.³² However, this effectively forces journals to yield their intellectual property rights in the peer reviewed

³⁰ 17 U.S.C. 106 identifies six rights of copyright owners, the first three of which are directly relevant:

- (1) to reproduce the copyrighted work in copies or phonorecords;
- (2) to prepare derivative works based upon the copyrighted work;
- (3) to distribute copies or phonorecords of the copyrighted work to the public by sale or other transfer of ownership, or by rental, lease, or lending;

17 U.S.C. 107 identifies limitations of these rights, “fair use”, and uses a four part balancing test to determine if the defense can be used:

- (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
- (2) the nature of the copyrighted work;
- (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
- (4) the effect of the use upon the potential market for or value of the copyrighted work.

There are other limitations contained within Title 17 including some focused on education and library users.

³¹ See testimony of Ralph Oman, former Register of Copyrights, before the House Oversight and Government Reform Committee, July 29, 2010. Available at <http://oversight.house.gov/wp-content/uploads/2012/01/20100729Oman.pdf>.

³² NIH open access policies, current and past, are available at <http://publicaccess.nih.gov/policy.htm>.

article to the NIH requirement or not accept an article funded by NIH for publication. In an attempt to address publisher concerns that these articles will be resold by others, NIH does prohibit the mass downloading of PUBMED Central articles.³³

Data Access

Printed research journals rarely include all of the supporting data used to support a research article due to space and printing costs, but in practice, scientists will often make the data available to other researchers upon request. Online access eliminates many publishing costs and some have argued that data created by federally funded research should also be made available so long as it does not conflict with other federal laws on privacy and confidentiality. This data could then be more easily used by other researchers and interested parties seeking to validate the data. There appears to be differing levels of support for greater access to the underlying data than for greater access to research journal articles.

Time Delays

Open access journals typically operate under a no delay system. Once an article is deemed ready for publication by the journal's editors, it is made available online immediately. Current law requires that "The Director of the National Institutes of Health shall require that all investigators funded by the NIH submit or have submitted for them to the National Library of Medicine's PubMed Central an electronic version of their final, peer-reviewed manuscripts upon acceptance for publication, to be made publicly available no later than 12 months after the official date of publication."³⁴ This delay allows publishers to continue to sell subscriptions to those who want immediate access to newly published research without free competition from PUBMED Central.

The need for a delay and the exact amount of its duration is a subject of debate with some advocates seeking immediate public release on the Internet while others seek to maintain a twelve month delay. Some have suggested alternative timeframes of a six or nine month delay in free access.

Witnesses

Dr. H. Frederick Dylla **
Executive Director and CEO, American Institute of Physics

Mr. Elliot Maxwell
Project Director for the Digital Connections Council, Committee on Economic
Development

Dr. Crispin Taylor **
Executive Director, American Society of Plant Biologists

Mr. Stuart Shieber
Director, Office for Scholarly Communications, Harvard University

³³ "PMC Copyright Notice." *National Center for Biotechnology Information*. U.S. National Library of Medicine. Web. 27 Mar. 2012. <<http://www.ncbi.nlm.nih.gov/pmc/about/copyright/>>.

³⁴ P.L. 110-161, Section 218.

Mr. Scott Plutchak **
Director, Lister Hill Library at University of Alabama at Birmingham

** Dylla, Plutchak, and Taylor were members of the 2010 Scholarly Publishing Roundtable organized under the auspices of the Committee.

Appendix A

Section 103 of the America Competes Act of 2010

SEC. 103. INTERAGENCY PUBLIC ACCESS COMMITTEE.

(a) Establishment- The Director shall establish a working group under the National Science and Technology Council with the responsibility to coordinate Federal science agency research and policies related to the dissemination and long-term stewardship of the results of unclassified research, including digital data and peer-reviewed scholarly publications, supported wholly, or in part, by funding from the Federal science agencies.

(b) Responsibilities- The working group shall--

(1) identify the specific objectives and public interests that need to be addressed by any policies coordinated under (a);

(2) take into account inherent variability among Federal science agencies and scientific disciplines in the nature of research, types of data, and dissemination models;

(3) coordinate the development or designation of standards for research data, the structure of full text and metadata, navigation tools, and other applications to maximize interoperability across Federal science agencies, across science and engineering disciplines, and between research data and scholarly publications, taking into account existing consensus standards, including international standards;

(4) coordinate Federal science agency programs and activities that support research and education on tools and systems required to ensure preservation and stewardship of all forms of digital research data, including scholarly publications;

(5) work with international science and technology counterparts to maximize interoperability between United States based unclassified research databases and international databases and repositories;

(6) solicit input and recommendations from, and collaborate with, non-Federal stakeholders, including the public, universities, nonprofit and for-profit publishers, libraries, federally funded and non federally funded research scientists, and other organizations and institutions with a stake in long term preservation and access to the results of federally funded research;

(7) establish priorities for coordinating the development of any Federal science agency policies related to public access to the results of federally funded research

to maximize the benefits of such policies with respect to their potential economic or other impact on the science and engineering enterprise and the stakeholders thereof;

(8) take into consideration the distinction between scholarly publications and digital data;

(9) take into consideration the role that scientific publishers play in the peer review process in ensuring the integrity of the record of scientific research, including the investments and added value that they make; and

(10) examine Federal agency practices and procedures for providing research reports to the agencies charged with locating and preserving unclassified research.

(c) Patent or Copyright Law- Nothing in this section shall be construed to undermine any right under the provisions of title 17 or 35, United States Code.

(d) Application with Existing Law- Nothing defined in section (b) shall be construed to affect existing law with respect to Federal science agencies' policies related to public access.

(e) Report to Congress- Not later than 1 year after the date of enactment of this Act, the Director shall transmit a report to Congress describing--

(1) the specific objectives and public interest identified under (b)(1);

(2) any priorities established under subsection (b)(7);

(3) the impact the policies described under (a) have had on the science and engineering enterprise and the stakeholders, including the financial impact on research budgets;

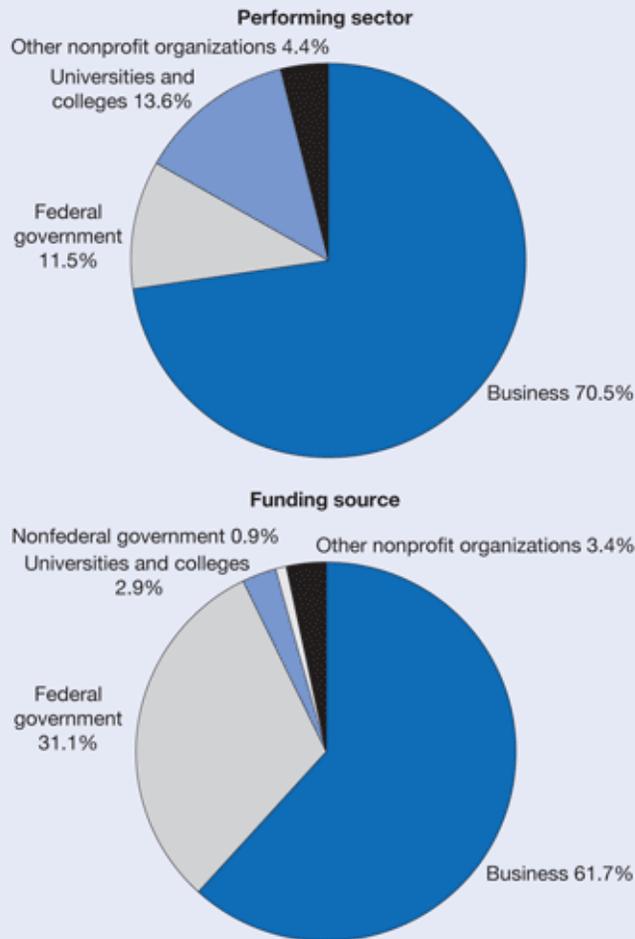
(4) the status of any Federal science agency policies related to public access to the results of federally funded research; and

(5) how any policies developed or being developed by Federal science agencies, as described in subsection (a), incorporate input from the non-Federal stakeholders described in subsection (b)(6).

(f) Federal Science Agency Defined- For the purposes of this section, the term 'Federal science agency' means any Federal agency with an annual extramural research expenditure of over \$100,000,000.

Appendix B

Figure 4-3
Shares of U.S. total R&D expenditures, by performing sector and funding source: 2009



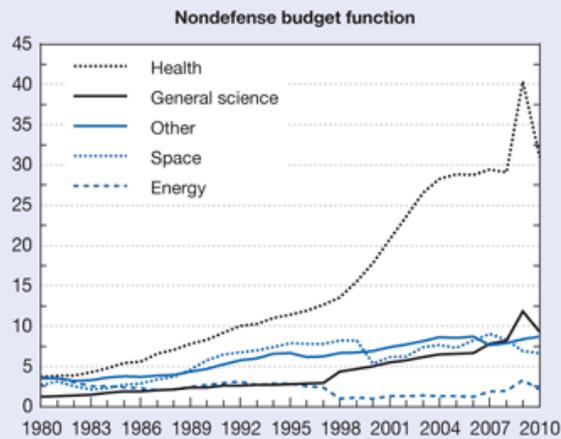
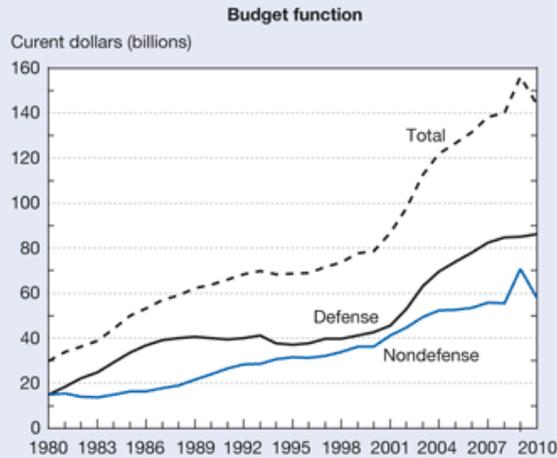
NOTES: Some figures involve estimates and may later be revised. National R&D expenditures are estimated to be \$400.5 billion in 2009. Federal performing sector includes federal agencies and federally funded research and development centers. State and local government support to business is included in business support for business performance.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series). See appendix tables 4-3 and 4-7.

Science and Engineering Indicators 2012

Appendix C

Figure 4-10
Federal budget authority for R&D, by budget function: FY 1980–2010



NOTES: Data for FY 2010 are preliminary. Data for FY 2009 include the additional federal funding for R&D appropriated by the American Recovery and Reinvestment Act of 2009. Other includes all nondefense functions not separately graphed, such as agriculture and transportation. 1998 increase in general science and decrease in energy, and 2000 decrease in space were results of reclassification.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Federal R&D Funding by Budget Function (FY 2009–11). See appendix table 4-28.

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